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(71) Applicant: **WHIRLPOOL EUROPE B.V.**  
**NL-5507 SK Veldhoven (NL)**

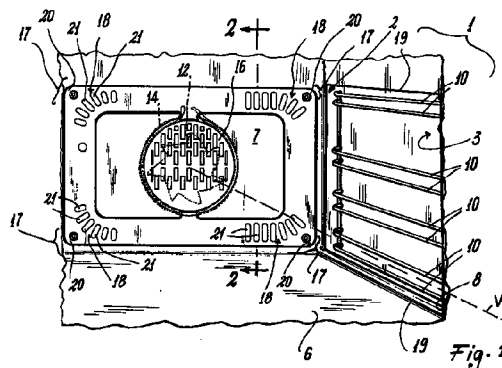
(72) Inventors:  
• **Ekinge, Ronald,**  
**c/o Whirlpool Italia s.r.l.**  
**I-21024 Biandronno (VA) (IT)**

• **Orlandi, Gigliana,**  
**c/o Whirlpool Italia s.r.l.**  
**I-21024 Biandronno (VA) (IT)**  
• **Bischoff, Claudia, c/o Whirlpool Italia s.r.l.**  
**I-21024 Biandronno (VA) (IT)**

(74) Representative: **Guerci, Alessandro**  
**I-21024 Biandronno (VA) (IT)**

### (54) Fan-assisted oven with improved air circulation

(57) A fan-assisted oven (1) comprises a cooking chamber (2) with side walls (3, 4), a roof (5), a lower wall (6) and a rear wall (7), beyond this latter there being positioned a compartment (11) housing a known electrical resistance element (14) and a usual motorized fan (12), a grille portion (16) being provided centrally within the rear wall (7) in front of said fan (12); at its corners (17), said rear wall (7) comprises regions (18, 77) through which air forced by the fan (12) is introduced into the cooking chamber (2), said air moving along said walls in proximity to their edges (19) during its introduction into said chamber (2) and being directed mainly towards the front wall or opening door of the oven, to then undergo redistribution within the chamber (2) and be then drawn by the fan (12) through the central grille (16) into the compartment (11) where said fan is housed.



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## Description

This utility model relates to a fan-assisted oven in accordance with the introduction to the independent claim.

In fan-assisted ovens of the state of the art, the rear wall of the cooking chamber is known to comprise, in addition to the central grille, one or more slots in its edges close to the other walls of said chamber (in particular the side walls). Air heated by the resistance element and forced by the fan penetrates through these slots into the cooking chamber and flows along its walls, to be then drawn towards the fan through the central grille. Other slots are also provided in the rear wall such as to also direct the hot air forced by the fan towards a central region of the cooking chamber.

This arrangement has the serious drawback that the exit air directly strikes the food contained in the oven and is not distributed uniformly within the cooking chamber. The food consequently has differently heated parts (with the parts close to the rear wall being hotter than the parts facing the usual closure door of the cooking chamber), this leading to various drawbacks such as a different degree of preparation (for example cooking) of different parts of the food and the need to move the food within the chamber so that different parts of it are made to face said rear wall. This latter requirement means that the oven door has to be opened with consequent entry into it of air at ambient temperature and a reduction in the internal temperature, with obvious drawbacks.

An object of the utility model is to provide a fan-assisted oven in which the drawbacks of known ovens are overcome.

A particular object of the utility model is to provide a fan-assisted oven in which there is a better distribution of hot air within its cooking chamber so as to improve the preparation quality of the food and in particular of a plurality of food items positioned at different levels within the oven.

A further object is to provide an oven of the stated type in which the food is not directly struck by the hot air flow, so preventing non-uniform preparation.

These and further objects which will be apparent to the expert of the art are attained by an oven in accordance with the accompanying claims.

The present utility model will be more apparent from the accompanying drawing, which is provided by way of non-limiting example and in which:

Figure 1 is a partial perspective view of the cooking chamber of an oven according to the invention;  
Figure 2 is a schematic section on the line 2-2 of Figure 1;  
Figure 3 is a front view of the rear wall of the cooking chamber of Figure 1;  
Figure 4 is a view similar to that of Figure 1 but showing a different embodiment of the oven according to the utility model;  
Figure 5 is a section on the line 5-5 of Figure 4; and

Figure 6 shows schematically the forced air circulation within the cooking chamber of an oven in accordance with Figures 1 and 4.

With reference to Figures 1 to 3, a fan-assisted oven (ie in which forced air circulation is created) is indicated overall by 1 and comprises a cooking chamber 2 defined by side walls 3 and 4, a roof 5, a lower wall 6 and a rear wall 7, it being open frontally at 8. On this open side there is provided a usual movable door, not shown. On the walls 3 and 4 there are positioned usual guides 10 for supporting known shelves and grids, not shown.

Beyond the rear wall 7 (with reference to the position of a user facing the oven) there is provided a compartment 11 containing in known manner a usual fan 12 driven by its own electric motor 13 and arranged to generate said air circulation within the chamber 2, and a known electrical resistance element 14 arranged to heat the air moved by the fan. To the front of the fan (of tangential type) there is a grille portion, formed as the central part of the wall 7.

According to the utility model, in corner regions 17 of the wall 7 there are provided one or more through slots 18 connecting the cooking chamber 2 to the compartment 11. These slots (which define corner grille portions) enable the air moved tangentially by the fan 12 to penetrate into said chamber at its edges 19, and to flow along these latter. Each air stream on striking the door is made to return towards the central axis of the chamber (indicated by W in Figure 1) so that the fan 12 draws it into the compartment 11 through the grille or grille portion 16.

The slots 18 can be of identical dimensions (such as those to the right for example in Figure 3) or of different dimensions (such as those to the left for example in Figure 3). In this latter case, the slots 21 positioned at the geometrical corner 20 of the wall 7 and in its immediate vicinity are of greater dimensions than the remaining slots to facilitate the said air circulation (ie so that each air stream leaving the slots 18 follows substantially the edges 19 of the chamber 1).

The utility model results in a better hot air distribution within the cooking chamber 2 (with considerable advantages in the preparation of the food and in particular of food items positioned simultaneously on different shelves within this chamber); in addition the air emitted by each corner slot 18 does not directly strike the food within the oven, so preventing different degrees of preparation (for example cooking) of different parts of one and the same food item.

Figures 4 and 5 represent a modified embodiment of the oven of Figures 1 to 3. In Figures 4 and 5, parts corresponding to those of the already described figures are indicated by the same reference numerals.

In the oven under examination, the wall 7 comprises a flat portion (in which the grille portion 16 is formed), from the upper and lower parallel sides 71 and 72 of which there extend two bent parts 73 and 74 arranged to cooperate with a back panel 75 defining with the wall 7 the compartment 11 housing the fan 12.

The parts 73 and 74 extend along only part of the sides 71 and 72 so that in conjunction with the side walls 3 and 4, the lower wall 6 and the roof 5, they define passages 77 positioned along the edges 19 of the cooking chamber 2. In the example, these passages are provided only along said sides 71 and 72 of the wall 7, but can also be provided along the vertical sides 78 and 79 (Figure 4) of this latter in proximity to the walls 3 and 4 of the chamber 2 (in other words they can embrace the corners 20 of the wall 7).

In the example, the sides 78 and 79 are bent towards the back panel 75 of said chamber and rest against it.

As in the case of the oven of Figures 1 to 3, the corner passages provided in the wall 7 enable a forced air circulation to be achieved (arrows W of Figure 4) along said edges 19 of the chamber 2.

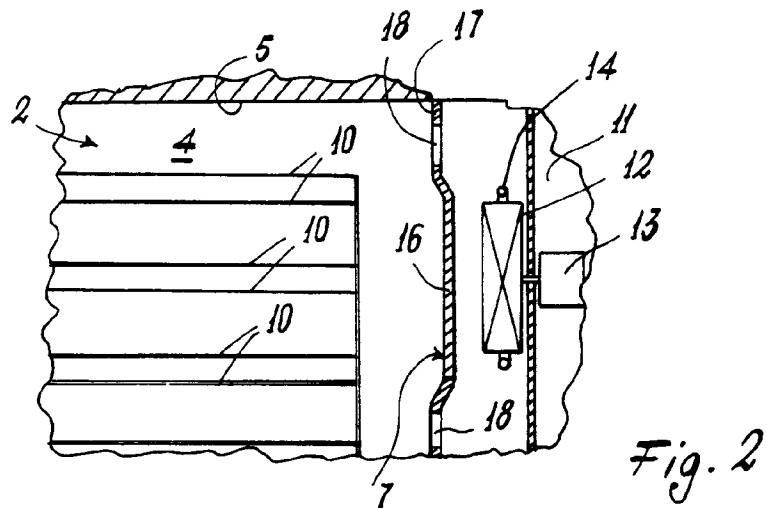
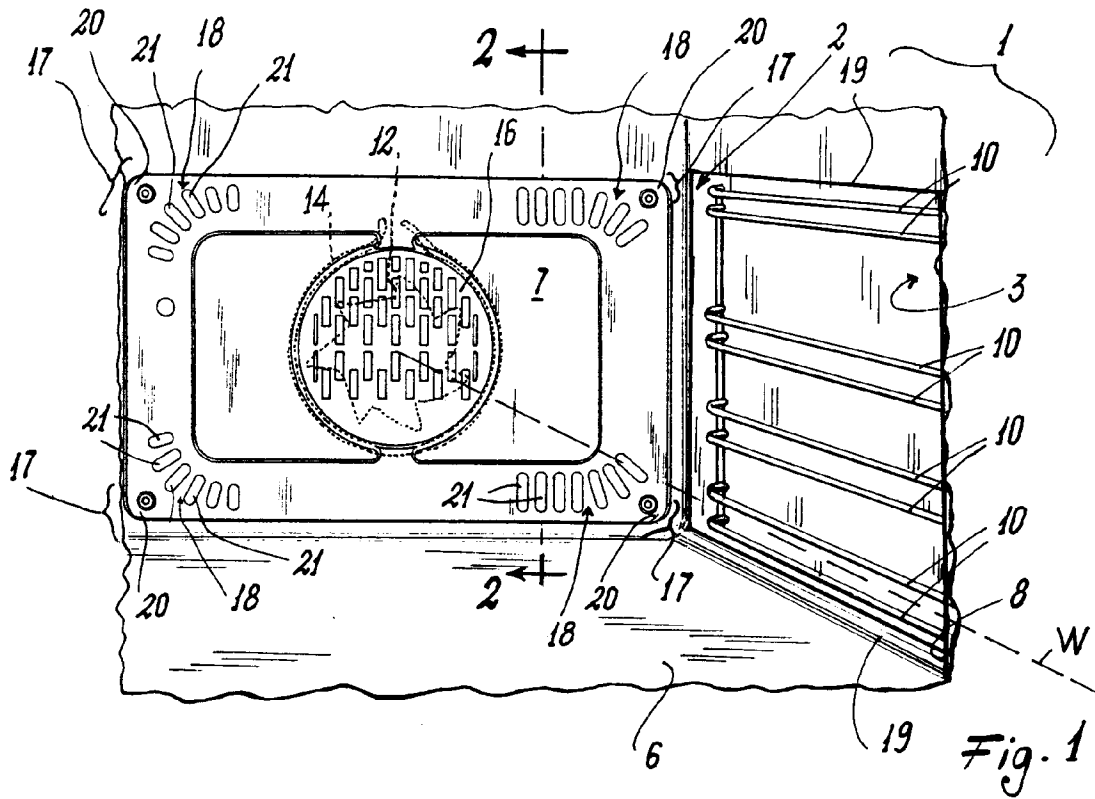
With reference to Figure 6 (in which parts corresponding to those of the already described figures are indicated by the same reference numerals), this shows schematically the air circulation within the oven 1. As can be seen, the forced air fed into the chamber 2 via the corner entry regions (defined by the slots 18 and passages 77) penetrates within the chamber 2 along its edges and on striking the door is deflected (arrows P) towards the central region of this chamber and drawn (arrows T) into the compartment 11 via the grille portion 16 by the fan 11. This enables the aforesaid advantages stated in relation to Figures 1, 2 and 3 to be obtained.

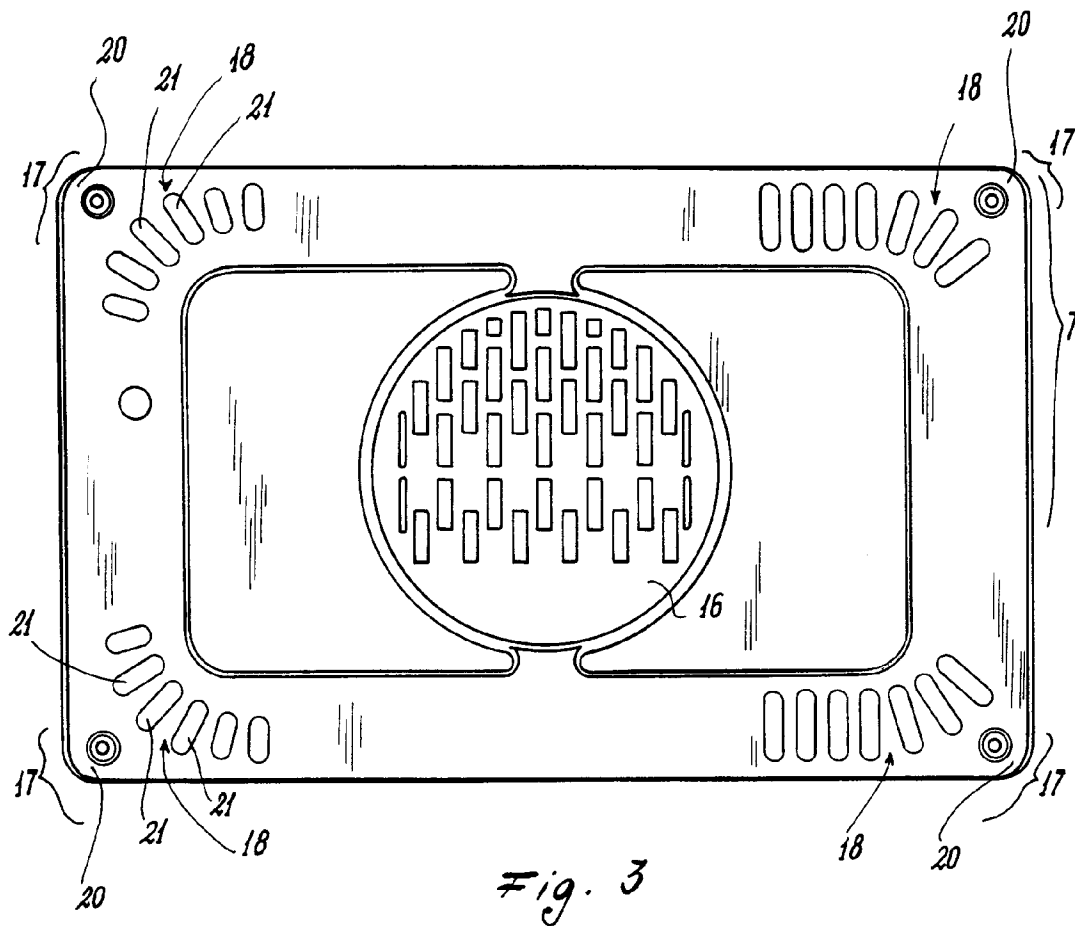
Different preferred embodiments of the utility model have been described. Other embodiments are possible in the light of the present description (such as one in which for example the slots 18 extend parallel to the edges of the corner regions 17 of the wall 7) while remaining within the scope of the present document.

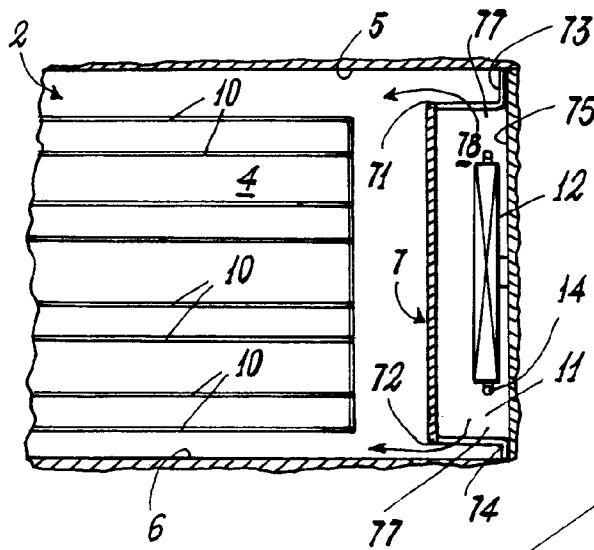
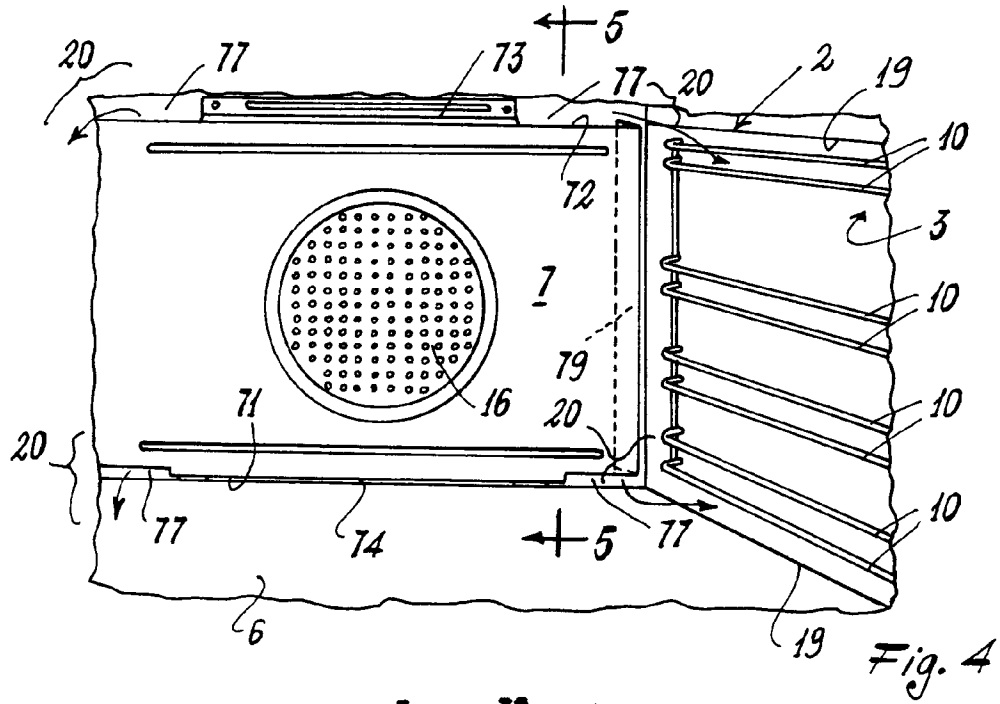
## Claims

1. A fan-assisted oven comprising a cooking chamber with side walls, a roof, a lower wall and a rear wall, beyond this latter there being positioned a compartment (11) housing a known electrical resistance element and a usual motorized fan, a grille portion being provided centrally within the rear wall in front of said fan, characterised in that at its corner portions (17), said rear wall (7) comprises regions (18, 77) through which air forced by the fan (12) is introduced into the cooking chamber (2), said air moving along said walls in proximity to their edges (19) during its introduction into said chamber and being then drawn by the fan (12) through the central grille (16) into the compartment (11) where said fan is housed.
2. A fan-assisted oven as claimed in claim 1, characterised in that the regions in which air is introduced into the cooking chamber (2) comprise at least one slot (18) positioned at the geometrical corners (20) of the rear wall (7).

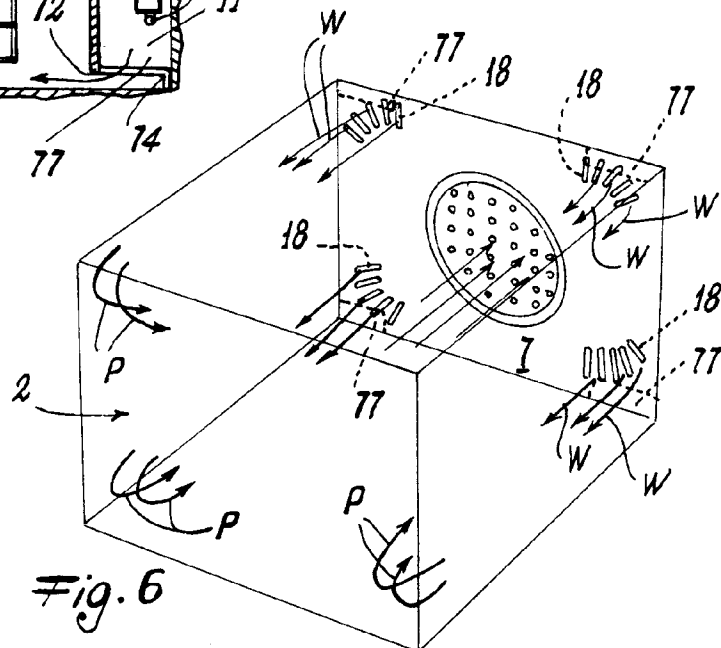
3. A fan-assisted oven as claimed in claim 2, characterised in that the slots (18) defining the air introduction regions comprise slots (21) of different dimensions.
4. A fan-assisted oven as claimed in claim 1, characterised in that the regions in which air is introduced into the cooking chamber (2) are passages (77) provided along sides (73, 74) of the rear wall (7).
5. A fan-assisted oven as claimed in claim 4, characterised in that the passages (77) are defined between bent parts (73, 74) of the wall (7) which connect this latter to a back panel (75) of the cooking chamber (2), and the adjacent parts (3, 4, 5, 6) of the cooking chamber itself.







*Fig. 5*





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# EUROPEAN SEARCH REPORT

Application Number  
EP 94 11 2321

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	PATENT ABSTRACTS OF JAPAN vol. 7, no. 287 (M-264) (1432) 21 December 1983 & JP-A-58 160 744 (MATSUSHITA) 24 September 1983 * abstract *	1,2	F24C15/32
A	EP-A-0 105 931 (MATSUSHITA) -----		
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			F24C A47J A21B H05B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 19 December 1994	Examiner Vanheusden, J
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